

# Molluscan Distributional Records from the Cumberland River, Kentucky

BY

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## INTRODUCTION

IN AN ATTEMPT to upgrade the distributional knowledge in Kentucky aquatic organisms, which is sorely lacking in many taxa (BRANSON, *et al.*, 1981), we have recently initiated a series of stream inventories for gastropods (BRANSON & BATCH, 1982, 1982a). This contribution extends the observations to 45 collecting sites in the Cumberland River system.

## COLLECTING SITES

The collecting stations delineated below are numbered consecutively, and in the annotated list that follows species and specimens are assigned to the stations by number. The figures in parentheses represent the number of specimens collected.

1. 19 September 1978. Woodland pond, 100m north of junction of U.S. routes 25 W and 25 E, Laurel County.
2. 6 May 1970. Rockcastle River at Kentucky Route 80, Laurel County.
3. 20 July 1968. Cumberland River at Kentucky Route 896, McCreary County.
4. 19 July 1968. Rockcastle River at Livingston, Rockcastle River.
5. 23 April 1978. Rockcastle River at Kentucky Route 490, Rockcastle-Laurel county line.
6. 19 July 1980. Buck Creek, Kentucky State Route 192, Pulaski County.
7. 27 June 1967. Mouth of Hammonds Fork of Clear Creek, Rockcastle County.
8. 11 July 1967. Clear Creek at Wildie, Rockcastle County.
9. 2 October 1970. Horse Lick Creek at Jackson-Rockcastle county line.
10. 18 May 1970. Rock Creek, just above mouth on South Fork of the Cumberland River, McCreary County.
11. 8 May 1966. Clear Creek, 4.6km SE of Disputanta, Mount Vernon Road, Rockcastle County.
12. 24 July 1975. Pitman Creek at Somerset, Pulaski County.
13. 7 May 1967. Mill Creek, Kentucky Route 221, Bell County.
14. 5 September 1980. Rockcastle River just below the narrows, Laurel County.
15. 10 September 1980. Pond just below main entrance to Pine Mountain State Park, Bell County.
16. 12 October 1980. Cumberland River at River Mile 652.5, near Barbourville, Knox County.
17. 5 July 1980. Roundstone Creek, U.S. Route 25, Rockcastle County.
18. 25 July 1979. Spring on Dry Fork of Skeggs Creek, Kentucky Route 1249, Rockcastle County.
19. 9 December 1980. Richland Creek, 1.4km above mouth, Bell County.
20. 10 December 1980. Cumberland River at River Mile 635, Knox County.
21. 9 December 1980. Cumberland River at River Mile 631.5, Knox County.
22. 9 December 1980. Cumberland River at River Mile 629.5, Knox County.
23. 8 December 1980. Cumberland River at River Mile 633, Knox County.
24. 5 September 1980. Rockcastle River at Billows, Rockcastle County.
25. 9 May 1980. Buck Creek, Kentucky Route 1677, Pulaski County.
26. 10 September 1980. Clear Creek at Pineville, Bell County.
27. 10 September 1980. Clear Creek at Pineville, Bell County.
28. 13 September 1980. Spring at base of Black Mountain, State Route 38, Harlan County.
29. 11 September 1980. Small unnamed tributary of Pitman Creek, 1.3km north of Somerset, Pulaski County.
30. 1 August 1980. Mouth of Brushy Creek, McCreary County.
31. 20 November 1980. Whorry Bog, 0.3km north of Tennessee State line, U.S. Route 27, McCreary County.
32. 10 September 1980. Farm pond at Whitley City, McCreary County.
33. 25 November 1980. Roadside ditch, 2.8km north of Tennessee State line, U.S. Route 27, McCreary County.
34. 11 October 1980. Ritner Ford, Little South Fork of the Cumberland River, McCreary County.
35. 9 May 1980. Rockcastle River at Interstate 75 crossing, Rockcastle County.
36. 14 September 1980. Little South Fork of the Cumberland River, State Route 80 crossing, McCreary County.
37. 17 September 1980. Indian Creek at State Route 700 crossing, McCreary County.
38. 10 October 1980. Little South Fork of the Cumberland River at river mile 10.6, McCreary County.
39. 10 October 1980. Little South Fork of the Cumberland River, State Route 92, McCreary County.
40. 10 October 1980. Little South Fork of the Cumberland River at mouth of Corder Creek, McCreary County.

41. 10 October 1980. Little South Fork of the Cumberland River at river mile 7.9, McCreary County.
42. 10 October 1980. Little South Fork of the Cumberland River at river mile 5.4, McCreary County.
43. 10 October 1980. Little South Fork of the Cumberland River at river mile 12.5, McCreary County.
44. 11 October 1980. Little South Fork of the Cumberland River at river mile 10.6, McCreary County.
45. 11 October 1980. Little South Fork of the Cumberland River at State Route 92 crossing, McCreary County.

## ANNOTATED LIST

### SPHAERIACEA

#### CORBICULIDAE

*Corbicula manilensis* (Philippi, 1844)

Collecting site: 4 (8).

Often a noxious pest, and possibly an aggressive competitor with native sphaeriids and unionids, this clam is seasonally abundant in the Rockcastle River. It has nearly excluded sphaeriids from many sites in the Little South Fork of the Cumberland, where it is exceptionally abundant (BRANSON & BATCH, 1982), particularly in the scenic section of the stream between State Route 80 and the mouth in McCreary County.

#### SPHAERIIDAE

*Sphaerium striatinum* (Lamarck, 1818)

Collecting sites: 12 (9), 19 (6).

Nearly universally distributed in small rivers and creeks in Kentucky.

*Pegias fabula* (Lea, 1831).

Collecting site: 9 (2).

*Pegias* was reported from this site by BLANKENSHIP (1971) and by STARNES & STARNES (1980). We observed the species on nine different riffles in the Little South Fork of the Cumberland River but did not collect specimens, since this clam is considered as endangered in Kentucky (BRANSON *et al.*, 1981). STARNES & STARNES' (1980) suggestion that the species should be listed as threatened rather than endangered is rejected, since the Little South Fork of the Cumberland population is the only site known at present which is not heavily impacted by human activities in Kentucky. Furthermore, mining operations are underway near that drainage, silt already being obvious in many of the pools and backwaters. Furthermore, the population of *Corbicula* in the stream is very large, doubtless creating competition problems for the native species.

#### PLEUROCERIDAE

Many of the putative pleurocerid species continue to cause problems for biologists with regard to diagnosis. The

faunas of the Green and Cumberland rivers of Kentucky and Tennessee include several of these species, some of which seem to have been described and named simply because they occurred in drainages other than those investigated at earlier dates. For example, *Goniobasis semicarinata* is relatively common in many Cumberland tributaries but most writers have not reported the species from that drainage, possibly because CALVIN GOODRICH (1940) listed the range of the species as "tributaries of the Ohio River, Sciota River, Ohio, to Big Blue River, Indiana; Licking River to Salt River in Kentucky; two creeks of Green River of Kentucky."

Many specimens from the Little South Fork of the Cumberland and other tributaries of the Big South Fork drainage are nearly indistinguishable from members of the *Goniobasis (Mudalia) potosiensis* (Lea, 1841)-*G. livescens* (Menke, 1830) complex (Carol B. Stein, Ohio State University, personal communication).

*Anculosa praerosa* (Say, 1824)

Collecting sites: 2 (2), 6 (2), 24 (6), and Smith Fork River, 7 km south of Lancaster, Smith County, Tennessee (2) (14 June 1974).

The two specimens from Station 2 are very similar to those reported from the Cumberland River in Russell County, Kentucky by GOODRICH (1934) as *Anculosa subglobosa* (Say, 1825), being very low of spire. The species is listed as Threatened in Kentucky (BRANSON *et al.*, 1981) and is currently under review for federal listing (Federal Register 1980).

*Goniobasis laqueata* (Say, 1829)

Collecting sites: 5 (5), 17 (2), 38 (4), 39 (28), 41 (9), 42 (104), 43 (1).

Carol Stein kindly compared samples from the Little South Fork of the Cumberland River with ones in the Ohio State University Museum, concluding that they seemed to be intermediate between typical *Goniobasis laqueata* and *G. edgariana* (Lea, 1841).

*Goniobasis cf. livescens* (Menke, 1830)

Collecting sites: 2 (9), 4 (30), 6 (16), 10 (3), 11 (55), 12 (3), 13 (23), 19 (3), 40 (28).

Discussed above. These specimens were diagnosed as *G. ebenum* (Lea) by Dr. George Davis, Academy of Natural Sciences of Philadelphia.

*Goniobasis plicata-striata* Wetherby, 1876

Collecting sites: 7 (31), 18 (10).

This may be a costulate form of *Goniobasis laqueata*, similar to the nominate *G. laqueata costulata* (Lea, 1841) from the Green River in Kentucky and Duck River in Tennessee.

*Goniobasis semicarinata* (Say, 1829)

Collecting sites: 8 (4), 12 (15), 19 (15), 22 (8), 37 (4), 40 (300), 41 (50), 42 (250), 44 (50), 45 (50).

Other than being encrusted with a black substance which often obscures the true shell color (horn to dark horn) and



sculpturing, these specimens are indistinguishable from *Goniobasis semicarinata* from the Licking and Kentucky rivers.

*Lithasia armigera* (Say, 1821)

Collecting site: 3 (1).

A rare and endangered species in Kentucky (BRANSON *et al.*, 1981) and elsewhere (Federal Register 1980).

*Lithasia obovata* (Say, 1829)

Collecting sites: 4 (1), 35 (2).

Listed as of Special Concern in Kentucky (BRANSON *et al.*, 1981), this species is very rare in the Cumberland River drainage.

*Pleurocera canaliculatum* (Say, 1821)

Collecting sites: 4 (15), 36 (1), and Center Hill Reservoir, DeKalb County, Tennessee (2) (19 June 1974).

Recent collecting indicates that this species is more common in portions of the Kentucky and Green river basins than in the Cumberland.

*Pleurocera curta* (Haldeman, 1841)

Collecting sites: 2 (8), 3 (4).

Of Special Concern in Kentucky (Branson *et al.*, 1981), this low-spined snail has become much less abundant in the Cumberland River with increased mining activities.

#### VIVIPARIDAE

*Lioplax subcarinata occidentalis* (Pilsbry, 1935)

Collecting site: 3 (4).

*Campeloma crassula* Rafinesque, 1819

Collecting sites: 27 (1), 34 (10).

*Campeloma integrum* (Say, 1821)

Collecting sites: 19 (7), 32 (6).

*Campeloma rufum* (Haldeman, 1841)

Collecting site: 25 (1).

*Viviparus gorgianus* Lea, 1834

Collecting site: 2 (1).

This species heretofore was known only from two Kentucky sites, Kenton (Licking River) and Warren (Green River) counties.

#### ANCYLOPLANORBIDAE

HUBENDICK (1978) recently offered a revisional version of the families Bulinidae, Planorbidae, and Ancyliidae, combining under the single epithet, Ancyloplanorbidae. He also combined *Menetus* and *Promenetus* with *Planorbula*, the last having priority, and *Armiger* was combined with *Gyraulus*. We follow his rationale here.

*Ferrissa rivularis* (Say, 1819)

Collecting sites: 20 (10), 23 (4).

Ancyliids are often overlooked in general collecting because of their small size and habitat. Thus, the family is very poorly known in Kentucky.

*Gyraulus parvus* (Say, 1817)

Collecting site: 15 (12).

Distributional records for all the small planorb snails in Kentucky are very scarce, for the reason mentioned above.

*Planorbula (Menetus) sampsoni* (Ancey, 1885)

Collecting sites: 16 (1), 23 (7).

The specimens were removed from dead leaves in backwater situations. The only previous record for this species in Kentucky came from a small woodland pond in Pine Mountain State Park in Bell county (BRANSON, 1972).

*Helisoma anceps* (Menke, 1830)

Collecting sites: 1 (7), 14 (2), 19 (6), 27 (1), 30 (1), 31 (7).

Nearly ubiquitously distributed in the Cumberland Plateau, Escarpment, and Cumberland River Enclave, this species is apparently more abundant in upland habitats than the next.

*Helisoma trivolvis* (Say, 1817)

Collecting site: 4 (1).

#### LYMNAEIDAE

*Lymnaea columella* Say, 1817

Collecting sites: 15 (8), 24 (1), 31 (7), 33 (1).

#### PHYSIDAE

Because of the chaotic state of systematic knowledge in this family, any specific diagnoses based upon shell characters are by necessity tentative, as are the ones discussed here.

*Physa heterostropha* (Say, 1817)

Collecting site: 15 (6).

*Physa integra* (Haldeman, 1841)

Collecting sites: 19 (8), 20 (13), 21 (11), 22 (16), 23 (7), 26 (15), 28 (11), 29 (20).

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